



# The reACT<sub>2</sub>ant

Fall  
2009

Volume 17 Issue #1

I hope you are having a good first six weeks. Summer ended on an extremely busy note for me.

I attended the POGIL conference at Westminster College in Salt Lake City.

POGIL is truly a unique way to approach chemistry. I encourage each of you to go to the POGIL website and download some of the high school worksheets. The idea in a nut shell is to have a model that teaches the concept so the students can figure it out more on their own. On the ChemEd 09 website there are some downloads that help implement POGIL. I have tried two activities in my AP classes and will implement the atomic worksheet in my regular classes soon. I think POGIL is a wonderful addition to my bag of teaching tools.

ChemEd 09 had some fabulous speakers. John Werner gave a moving talk on how we need to train chemists to make products safer, cheaper and easier. He has a website for teachers named Beyond Benign (<http://www.beyondbenign.org/>) Check out the curriculum materials.

Dr. Joe Schwarcz was the Reg Friesen Lecturer. He was great. He has written numerous books that demystify chemistry. Check out his website at <http://oss.mcgill.ca/schwarcz.php>

Terrific Science gave everyone who came by the booth a copy of Toys that Teach Chemistry for their 25th anniversary.

Vernier's workshop on using the new

*Investigating Chemistry through Inquiry* was great. The lab manual is written with minimal directions for the students, but maximum information for the teacher on the lab results based on the researchable question the students pick. This lab manual is a must have.

Finally I would encourage you to check out ChemEd DL at [www.ChemEdDL.org](http://www.ChemEdDL.org). You will find the periodic table live, molecules 360, JCE classroom activities, courses, virtual laboratories, science for kids. Hope to see you at CAST  
Meg



Inside  
this  
Issue:

Board Notes.....	2
Venn Diagram .....	3
Workshops.....	4- 5
Chemical Sunset.....	6
Equation Solver.....	7
Using Excel to grade.....	8-9
Teaching ideas & News .....	10-11
Mole Day ideas.....	12

### **CAST Scholarships:**

Check out the ACT2 webpage for 10 CAST 2009 Scholarships to be given to teachers in need.

Nominate a fellow teacher for the Teacher of the Year Award.

Look for "The Spirit of ACT2" award form in honor of Rosendo Garcia.

Be sure to keep your email address current with Bob Casao so the science updates and news comes to you. If your school has a spam filter, you may want to get a gmail address so news comes through.

The **2010 ACT2 Biennial** is currently scheduled for June 28 - July 1 in Katy, TX.

BCCE 2010 will be at the University of North Texas on August 1-5, 2010.

Webpage: <http://bcce2010.org>

ChemEd 2011 will be at Western Michigan in Kalamazoo on July 24-28, 2011.

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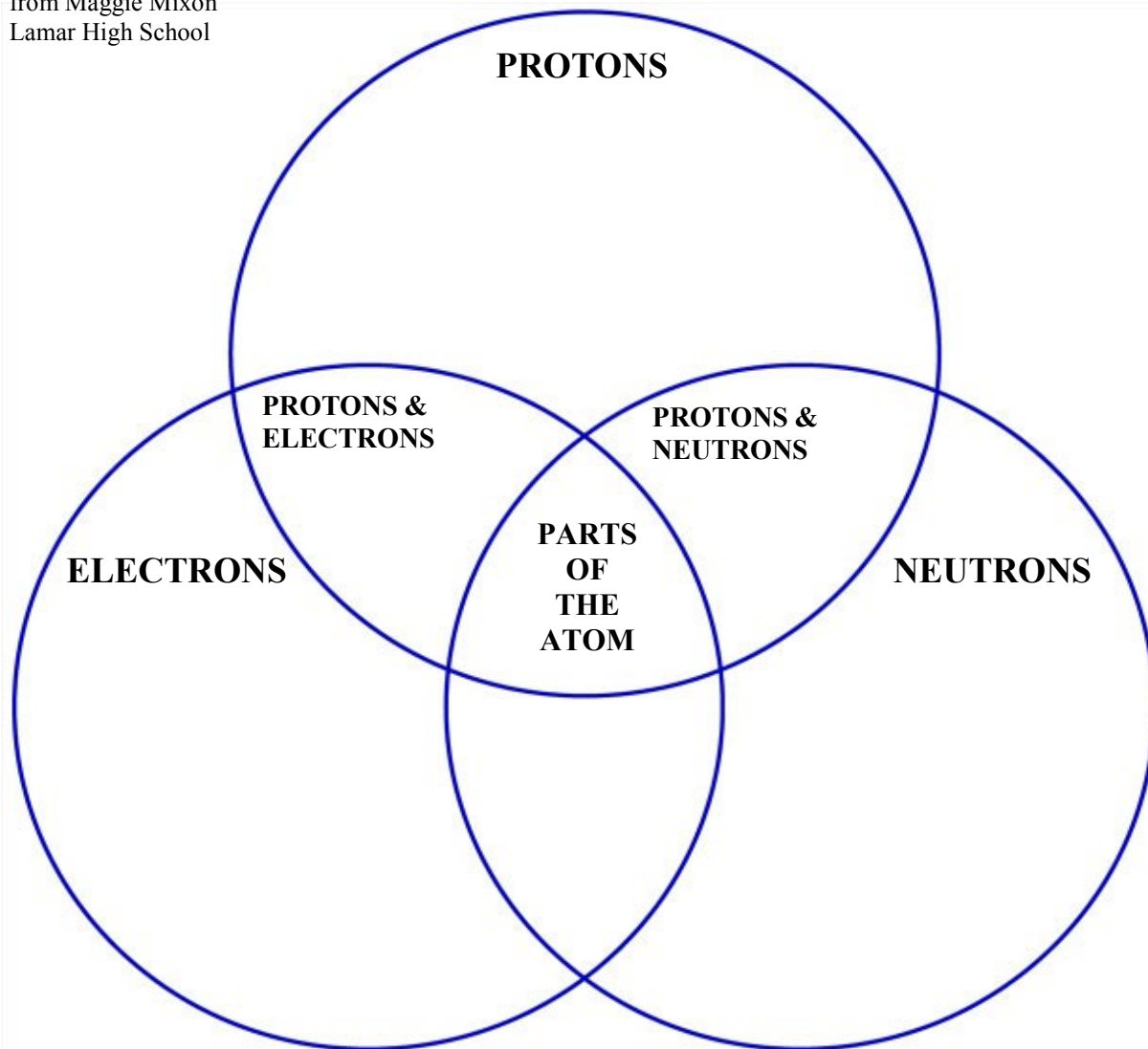
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from Maggie Mixon  
Lamar High School



Use the terms, symbols and phrases listed below to complete the Venn diagram comparing parts of an atom.

positive charge  
very small  
orbit the nucleus  
involved in bonding

negative charge  
symbol is  $p^+$   
have a charge  
mass = 1 amu

neutral  
symbol is  $n^0$   
symbol is  $e^-$

in nucleus  
same size

Atomic number = number of protons

Mass number = number of protons + neutrons

Charge = number of protons – number of electrons

# The $_{20}\text{Ca}_{10}\text{Ne}$ Roundup

**21st Biennial Conference on Chemical Education**  
**2010: A New Decade for Opportunity**  
**August 1-5, 2010**  
**University of North Texas, Denton**

If you've never attended BCCE, now is the time! The Biennial Conferences on Chemical Education (BCCEs), sponsored by the ACS Division of Chemical Education, are the largest gathering of chemical educators in the world. They are designed for all levels of chemistry aficionados and enthusiasts: secondary school chemistry teachers through college chemistry instructors. This conference emphasizes the improvement of chemistry education at all levels, the modern developments in chemistry and chemical education, and is highly respected in the chemical education community. The high school program committee is awesome! Our very own, Jo King, Treasurer, with Bettyann Howson and Diane Krone from New Jersey (George Hague's first home!) are planning a spectacular program.

Here are some samples of the symposia in store:

- \* Adding \_\_\_casts to Your Chemistry Teaching Toolbox
- \* Best Practices with High School Dual Enrollment Courses
- \* Cognition in Chemistry Education
- \* Electronic Homework: What have we learned
- \* Food and Cooking in the Chemistry Curriculum
- \* Green Chemistry Education - What, Why, How
- \* Out of the Box: Teaching Chemistry with Case Studies and Applications
- \* Teaching Environmental Chemistry
- \* The G, O, Bs of Allied Health Chemistry
- \* The New ChemSource: Standards, Assessment, and More

Workshops (our friend, Bill Deese, from Louisiana Tech is Chair):

- \* Effective Molecular Modeling Demonstrations for Everyone
- \* Forensic Science: An Introduction to the Analysis of Evidence
- \* Producing \_\_\_casts for your chemistry courses
- \* WebAssign--I Would Not Want to Teach Without It

In addition to the traditional plenary presentations, symposia, poster sessions, workshops and product exhibition, we are planning several evening activities to meet and greet each other. Included in our plans are:

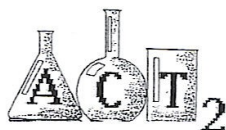
- The opening ceremonies at The Auditorium, keynote address, and a Raisin' CaNe Opening Party Sunday evening in the BCCE Exhibit Hall (over 20 booths and counting) at the University Union featuring the renowned One O'Clock Lab Band (jazz) and mucho drink and grub.
- On Boot Scootin' Tuesday night get a taste of Texas BBQ at the Circle R Ranch spread across 100 acres with entertainment options as BIG as Texas, including armadillo racing, Texas music with the Grammy-nominated Crawfish Band, line-dancing and get to know the Cowgirl Chicks and enjoy the presentation of the Colors by the Palomino Riding Club at the rodeo.

Wednesday evening attend the BCCE Pachanga featuring the Al D. Hyde and the Key Tones in the Silver Eagle Ballroom of the University Union

**SYMPOSIA PROPOSAL SUBMISSION DEADLINE IS NOVEMBER 6, 2009**

**WORKSHOP PROPOSAL SUBMISSION: MARCH 2, 2009 – DECEMBER 11, 2009**

**ABSTRACT SUBMISSIONS: NOVEMBER 23, 2009 – FEBRUARY 12, 2010** [www.bcce2010.org](http://www.bcce2010.org)



Associated Chemistry Teachers of Texas

## CAST 09

## Workshops &amp; Short Course

**Thursday:****San Luis Hotel**

- 9:00 AM "New To Chemistry? Learn from Master Teachers"  
Amiee Modic & Friends **5 hour short course**  
Room: Tops'1
- 2:00 PM "E is for ENGAGE"  
Rhonda Alexander Room: Tarpon
- 2:00 PM "A Demo A Day"  
Vinay Dulip Room: Squarerigger
- 3:45 PM "Halloween Chemistry Demo Show"  
Kerri Boyd Room: Squarerigger

**Friday:****San Luis Hotel**

- 8:00 AM "Molecular Motivation"  
Sharon Williams Room: Squarerigger
- 9:45 AM "Experiments with Consumer Chemicals Lab"  
Meg Young Room: Squarerigger
- 11:30 AM "E is for Explore"  
Rhonda Alexander Room: Squareigger
- 2:00 PM "A Blueprint Lab"  
Dianne Aparicio Room: Squarerigger
- 3:45 PM "25 Years of Chemistry: That is Crazy!"  
Roxie Allen Room: Squarerigger

**Saturday:****San Luis Hotel**

- 9:00 AM Share-A-Thon Room: Grand Ballroom C
- 12:00 PM Luncheon Room: Grand Ballroom C

**Speaker: Paul Price****Lots of door prizes and gifts.****Visit the booth in the exhibit hall.**

## The Classic Chemical Sunset Demonstration

### From Ken Lyle

Page 6

In this demonstration colloidal sulfur is produced by the reaction that occurs when a thiosulfate solution is acidified. As the colloidal sulfur particles increase the light is scattered (Tyndall Effect). The light projected on the screen changes color from white to yellow, to orange, to red, and finally black. The wavelength of light that is scattered is dependent upon the size of the particles.

#### Materials

Overhead projector and screen  
Cardboard large enough to cover the top of the overhead projector  
Large beaker, Petri-dish, or crystallization dish  
Sodium thiosulfate pentahydrate solution (7 g per liter)  
Concentrated hydrochloric acid (5 mL)

Stirring rod

#### Safety

1. Wear goggles and protective apron and gloves  
Concentrated hydrochloric acid is extremely hazardous. Avoid contact and inhalation of fumes. It is suggested that you measure the 5 mL in advance (under a fume hood) and place it in a small, closed, glass bottle suitable for concentrated acids. If contact with acid occurs, rinse immediately with copious amounts of water. Dilute spills and then neutralize with sodium hydrogen carbonate (baking soda).

#### Procedure

1. Cut a hole in the cardboard the size of the beaker (petri dish or crystallization dish).
  2. Set the cardboard on the overhead projector and place the beaker over the hole.
  3. Add enough of the sodium thiosulfate to cover the bottom of the container.
  4. Turn on the projector light.
  5. Add the 5 mL of concentrated hydrochloric acid, mix quickly and then let stand.
- Observe both the container and the screen.

#### Note:

This demonstration is a good lead into chemical kinetics. After the students understand what is happening ask them how the rate of growth of the colloidal sulfur particles could be regulated. Allow them to propose their ideas, and, if possible to actually explore them by conducting their own investigations.

#### References

Summerlin, Lee R. & Ealy, James L. (1985). *Chemical Demonstrations: A Sourcebook for Teachers*. Washington, D.C.: American Chemical Society

Shakhashiri, Bassam Z. (1989). *Chemical Demonstrations: A Handbook for Teachers of Chemistry*, Vol. 3. Madison, WI: The University of Wisconsin Press

Flinn Scientific, Batavia, IL, has Chemical Sunset Demonstration kits available for purchase. Included in each kit is a tropical beach cutout to create a "special effect" as the sunsets. Add some Hawaiian music as a special added touch.

Terrific Science has a new OUTREACH for EDUCATORS called Strive to Thrive at <http://www.terrificscience.org/thrive/> **CHECK IT OUT.** For reading labels look at <http://www.terrificscience.org/healthrich/> Sign up the for the Free Newsletter to get lots of great ideas.

From Harvey Gendreau

To clear all real numbers. Hit 2nd mem followed by 2 and then 2 again.

This clears real numbers.

Equation solver is found by hitting the math key followed by 0 to go to equation solver.

If there is an equation present, clear the equation and it should look like:

eqn= $\emptyset$ = $\square$

Try a simple problem:  $2.5X=150$

Enter as  $\emptyset=2.5x-150$ , then hit enter.

With the curser flashing at X= put in a number guess.

Press alpha then SOLVE (enter) Calculator solves and gets  $X=60$ .

Now Ideal Gas Law Problem:  $PV=nRT$

eqn= $\emptyset$ = $NRT-PV$  enter. Use alpha button to get letters. Enter

You will see

N=

R=

T=

P=

V=

Now enter the values you want to use to solve the problem. If you have to do a conversion, just type it in where the variable is and it will solve it. Put a number in the variable you are solving for and move the curser to the right side of the number, then hit alpha solve. Example:

N= ? so put 1

R= 0.0821

T=25.0 + 273

P= 110.0 kPa/101.3 kPa to convert to atm

V= 2.0

Move the curser to the right side of 1 and hit alpha solve. N= 0.089 mol Be sure and scroll all the way to the left to check for exponent.

Now change the volume to 4.0 L and see how pressure changes.

This is a way to help students with the math of chemistry.

### D<sub>2</sub>UM<sub>2</sub> Stoichiometry

$3H_2 + N_2 \rightarrow 2NH_3$  Given 100 g hydrogen gas, find the mass of ammonia produced.

100 g

Divide by molar mass

2g/mol

50 mol

Divide by coefficient

3

Move UNDER the species you are looking for

16.666 x 2

Multiple by coefficient

33.333 x 17

Multiple by molar mass

567 g

# USING EXCEL TO CHECK LAB DATA

page 8

Reported by Shelley Abernathy

There was a large Texas representation at ChemEd in Radford, VA during the first week of August. I attended several good workshops, but I was the only Texan at a workshop showing how to use an Excel program to grade students' lab calculations

A basic knowledge of Excel is needed to use this idea. Bruce Outland from Pennsylvania is the teacher who presented this idea. He uses a different sheet for each lab his students do and customizes the cell equations for the data calculations. An example follows.

## Determining the Empirical Formula for Manganese ( ) Chloride

### Data & Observations:

#### Day 1:

1. Mass of beaker \_\_\_\_\_
2. Mass of manganese \_\_\_\_\_
3. Observations: \_\_\_\_\_

#### Sample Data:

99.20000 g (B1)  
3.19100 g (B2)

#### Day 2:

1. Observations: \_\_\_\_\_
2. Mass of beaker & compound \_\_\_\_\_ 108.05900 g (B3)

**Calculations:** Express all results with the correct number of significant digits.

1. Find the mass of manganese and chlorine in compound formed. All values require units.
  - a. Mass of Mn \_\_\_\_\_ 3.19100g
  - b. Mass of Cl \_\_\_\_\_ 5.66800g
2. Convert the masses from #1 to moles, then determine the empirical formula for the manganese ( ) chloride product. NEATLY show your work below. All values require units.
  - a. Moles of Mn \_\_\_\_\_ 0.05808 mol
  - b. Moles of Cl \_\_\_\_\_ 0.15989 mol
  - c. Mn:Cl ratio \_\_\_\_\_ 1.00 to 2.75
  - lowest whole # factor \_\_\_\_\_ 4
  - Whole # Mn:Cl \_\_\_\_\_ 4.00 to 11.01
3. Determine the percent composition, by mass, of Mn&Cl in the compound you made. Show your work.
  - a. %Mn \_\_\_\_\_ 36.02%
  - b. % Cl \_\_\_\_\_ 63.98%

### Setting up Lab Grading Spreadsheet (formula for cells)

Type in the name of the data in the A cells and then plug in student data into the corresponding B cell. For the numbered cells that follow, use the following equations:

A4 type Mass of Cl	B4 type = B3-B2-B1	
A5 type Moles Mn	B5 type = B2/54.938	
A6 type Moles Cl	B6 type =B4/35.45	
A7 type ratio Mn	B7 type =B5/B6	
A8 type ratio Cl/Mn	B8 type = B6/B5	
A9 type	B9 type =B8/B7	
A10 # Mn	B10 type= B9*B7	
A11 #Cl	B11 type= B9*B8	
A12 type %Mn	B12 type= B2*100/(B2+B4)	Conclusion question #5
A13 type %Cl	B13 type= B4*100/(B2+B4)	Conclusion question #5
A14 type gCl	B14 type=B13*12.5/100	Conclusion question #6



**Conclusions:**

1. If you didn't get a subscript of "1" for Mn in your empirical formula above, use the information given in the introduction and pre-lab assignment to make your best guess as to the real empirical formula. **EXPLAIN YOUR ANSWER OR YOU WON'T RECEIVE CREDIT.** If your empirical formula calculation already does have a subscript of "1" for Mn, you may move directly to conclusion #2.
2. If the manganese chloride product was still a little wet when you last measured the "mass of the beaker and compound," would the mole ratio of chlorine be higher or lower than it should be? **EXPLAIN YOUR ANSWER OR YOU WON'T RECEIVE CREDIT.**
3. What is the full name of the compound you obtained? Use your "correct" answer from conclusion #1 to determine the name. (Be sure to include a Roman numeral.)
4. Now that you know the formula of the manganese chloride product, write the balanced chemical equation for the single replacement reaction between the manganese and hydrochloric acid (HCl).
5. Determine the percent composition, by mass, of Mn & Cl in the compound you made. Show your work.
6. Using the percent compositions you calculated in #5, determine how many grams of chlorine that 12.5g of a manganese chloride sample contains. Show your work.

Rename the sheets for each lab by right-clicking on the words "sheet x" at the bottom & typing the new name. Use this technique to write calculations for different labs you have. Type in student data for the 1<sup>st</sup> 3 cells (mass beaker, mass Mn, mass beaker + MnCl<sub>x</sub>) and Excel will do the rest for you! If you have to type in a number where the equation is (for kids who did the original math wrong,) just close the program without saving, and the original will be there for you. This is done to keep from penalizing students for the same error more than once. Shelley commented this is an idea Rosendo would have loved.

Here is a picture of George (Rosendo's world traveling mole) with George Hague's sister. Shelley and Melissa made sure George traveled to Chem Ed 09 and had his picture taken along the way.

Shelley and Melissa did a wonderful job of speaking at the Mole Day breakfast about Rosendo.

Both may be gone, but they are not forgotten. They both still inspire us.



## Element 112 is Named Copernicium

By Anne Marie Helmenstine, Ph.D.

Element 112, which has been going by the name "**Ununbium**", has been given a new name, "**Copernicium**". Copernicium has been named for Nicolaus Copernicus, who proposed the heliocentric solar system. The discoverers of copernicium wanted the element's name to honor a famous scientist who did not get much recognition during his own lifetime. Copernicus was so afraid to announce his work that he published his theories on the day of his death. Also, Hofmann and his team wished to honor the importance of nuclear chemistry to other scientific fields, such as astrophysics. Sigurd Hofmann and his team announced their name choice on July 14th. Copernicium was the sixth element discovered at the GSI. The last four elements were named for cities or states in Germany, but Hofmann wished to end the flag-waving associated with element names, seeking worldwide for a scientist to honor with the element name. Copernicus was a Polish scientist. What is its symbol? Cp?

\*\*\*\*\*

## Flaming Tornado & Cheer

**Materials:** Lazy Susan, Hardware cloth (garden center), evaporating dish, clay, lighter fluid, paper towel

**Safety:** Goggles, apron,

**Procedure:** Roll the hardware cloth into a tube that fits the lazy susan resting just inside the lip. Attach the evaporating dish to the center of the lazy Susan with the modeling clay. Place a wadded up half sheet of paper towel in the evaporating dish. and add enough lighter fluid to wet the paper towel. Light the paper. Center the metal tube on the lazy Susan give it a GENTLE spin. The flame should act like a fiery tornado!

**Cheer:** Our Spir-it is rising!  
It can't be stopped!  
We are the teachers!  
That can't be topped!

For more directions with pictures, check out Bill Deese's website: Dead Chemist Society at <http://www.deadchemistssociety.com/pillaroffireapp.html>

The cheer idea came from Melissa Jones, Shelley Abernathy, Terri Simmons, and Rosendo Garcia at the last Biennial Conference. They acknowledge Bob Becker as the source of the demo from the 1993 Biennial Conference in Austin.

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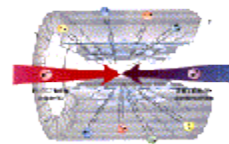
## MIT Open Course Ware

Many students enter the required introductory chemistry course at MIT with a passion for biology and cancer research, but don't realize that the mechanisms of biological processes are rooted in chemistry. In an effort to illuminate the connections between disciplines and to get students excited about chemistry, MIT has developed materials that relate the principles taught in general chemistry to inspiring topics in biology and medicine. There are over 25 in-class examples that range from two to ten minutes, designed to succinctly introduce the chemistry behind biological and medical topics without sacrificing any chemistry content in the curriculum. These resources are available to chemistry teachers at:

<http://ocw.mit.edu/OcwWeb/Chemistry/5-111Fall-2008/BiologyTopics/index.htm>



## High School Teachers at CERN



Evelyn Restivo of Maypearl, a chemistry and physics teacher at Global Early College High School in Waxahachie was selected to participate in the summer 2008 prestigious High School Teacher Program (HST) at the European Organization for Nuclear Research, CERN, in Geneva, Switzerland. CERN, the European Organization for Nuclear Research, is the world's leading laboratory for particle physics. It is the home of the Large Hadron Collider, the highest energy particle accelerator ever built. Its development has been a joint effort of scientists from all over the world and had the initial start-up in September 2008. The second start-up date could be as early as November 2009.

Thirty-eight high school teachers from Europe, African, Asia, Latin American, South America, and North America attended the three-week HST-2008 program. The participation of the five teachers from the United States was supported by a grant from the National Science Foundation to the University of Michigan. Cheryl Brooks of Arlington was a participant at the HST 2009 Program. The teachers are selected from active QuarkNet members who regularly participate in and present talks and workshops at local, state and national levels.

Initiated in 1998 by a group of scientists, HST is a multicultural international program designed to introduce high school physics teachers to high-energy physics. The goal of the program is to provide experiences and materials that will help teachers lead their students to a better understanding of the physical world. Interacting with physics teachers from around the world leads to new approaches for dealing with educational issues that all teachers encounter. The participating teachers attend lectures and workshops on topics ranging from particle detection and cosmology to the new physics expected from the Large Hadron Collider and Grid computing, they visit experimental sites at CERN and, in working groups, design and produce new classroom teaching resources about high energy physics. These materials are available, on the CERN web site, to teachers around the world (<http://teachers.web.cern.ch/teachers/>).

Evelyn Restivo is an LHC QuarkNet Fellow at Fermilab, a Physics Teaching Resource Agent for the American Association of Physics Teachers, and an active member of the Texas Section of the American Association of Physics Teachers, the Association of Chemistry Teachers in Texas, the State Teachers Association of Science Teachers and the National Association of Science Teachers. Pictures of Evelyn are below.



## MOLE DAY ACTIVITIES

### MOLE DAY THEME 2009: MOLAR EXPRESS

The National Mole Day Foundation needs ideas for future themes.

### **Molar Slogans & Ideas from Carrie Jacobus**



*access her presentation at* <http://webct6.radford.edu>

Login name: ChemedFall2009 Password: ChemEdF2009

Have you hugged your MOLE today?

That's MOLE like it!

Chemistry pays-become a MOLE-ionaire.

It's chemistry time-do you know where your MOLES are?

So many atoms, so few MOLES.

Chemistry: There's MOLE to it than you think.

A MOLE in the hand is worth  $6.02 \times 10^{23}$  in the bush.

MOLES for world peace: Make chemistry not war.

May the MOLE be with you.

The more you study chemistry, the MOLE you'll know.

We're the chemists. We're looking for a few good MOLES.

MOLES gopher chemistry!

**How much is a Mole?**

Count the number of dots/minute. \_\_\_\_\_

Calculate the number of dots/hour.

Calculate the number of dots/day.

Calculate the number of dots/year.

Determine the number of years it will take to make 1 mole of dots.

Play who wants to be a moleionaire: <http://www.billcarroll.org/Moleionaire.htm>



## **A Kaleidoscope of Chemistry in Katy ACT<sub>2</sub> Biennial Conference June 28 – July 1, 2010**

What an opportunity! The Associated Chemistry Teachers of Texas hosts a Biennial Conference every other summer to allow a time for sharing and advancing ideas for quality chemical education in Texas. Next summer our conference will be held in Katy, Texas; which is just west of Houston. If you haven't attended an ACT<sub>2</sub> event before, this is your chance; if you have attended then you're already excited and looking forward to this one of a kind conference. Check out just a few of the several reasons to attend our Kaleidoscope of Chemistry:

- K – Katy, Texas – Home of Champions – also the symbol for Potassium!
- A – Art and Chemistry connections
- L – Lots of Chemistry Teachers
- E – Extraordinary friendships
- I – Intimate setting – If you're looking for something that's not so overwhelming, but still helpful, this is your place!
- D – Discounts for Presenters!
- O – Opportunities to share and learn in an intimate setting
- S – Scholarships available!
- C – Chemistry, Chemistry, Chemistry!
- O – Over the top silent auction event!
- P – Plenty of sessions to attend
- E – Excitement and Lots of Chemistry Fun!!!!

Highlights to include:

Nationally known dynamic presenters  
Chemistry and Art sessions  
Lots of Sessions  
Discounts for Presenters

George Hague Memorial Ice Cream Social  
Mole Stroll  
Banquet at the Swingin' Door  
Silent Auction

Make your plans now to spend a few days with us at the Kaleidoscope of Chemistry Biennial Conference in Katy, Texas.

TAKS Tests were released this year and can be found at

[http://www.tea.state.tx.us/index3.aspx?id=3839&menu\\_id3=793](http://www.tea.state.tx.us/index3.aspx?id=3839&menu_id3=793)

I was surprised when I went to download this years test that more 2006 tests have been released. You might want to check it out.

**It's Elemental!****October 18-24, 2009**

In honor of the 140<sup>th</sup> anniversary of Mendeleev's Periodic Table of the Elements, help celebrate the chemistry that's all around us. Every Chemist and Chemistry teacher loves the periodic table, so what a great excuse to celebrate what you love! Host an elemental festival by gathering examples of household items and identifying the elements of which they are composed. Have your students research an element and make a business card with an appropriate logo, address, etc, and then have a meet and greet. Assemble a large periodic table on a wall or a floor or make a periodic table of your faculty. Sing along with the Flash animation of Tom Lehrer's "The Elements" at <http://www.privatehand.com/flash/elements.html>. Be crazy and creative - the only limit is, well, the current number of elements. Here are some additional resources - check 'em out.

<http://portal.acs.org/portal/acs/corg/content> go to Education – Community Outreach – National Chemistry Week. You should be able to download an issue of *Celebrating Chemistry* which is geared towards elementary and middle school students with some fun activities and puzzles as well as interesting facts about the many uses of elements like tungsten in lightbulb filaments, carbon in graphite pencil leads, and the neon in "Open" signs. The high school magazine *Chematters* [www.acs.org/chemmatters](http://www.acs.org/chemmatters) will also have some great NCW ideas available soon.

Stanford University Library has provided a wide variety of print, video and online resources for NCW that are classified by grade level interest

<http://www-sul.stanford.edu/depts/swain/hosted/ncw/2009/print.html>

Take advantage of high tech – check out the Element podcasts offered by the Royal Society of Chemistry. A leading scientist or author will take you on a 5 minute audio tour of a story behind an element. <http://www.rsc.org/chemistryworld/podcast/element.asp>

**Some really cool periodic table (PT) sites include:**

The new ACS Interactive Periodic Table can be found at <http://portal.acs.org/portal/acs/corg/content>

This periodic table is done by the University of Nottingham, England, and it has a little different twist. There is a short video and/or experiment for each element on the periodic table. <http://www.periodicvideos.com/nyt/index.htm>

Always fun – the Periodic Table of Comic Books

<http://www.uky.edu/Projects/Chemcomics/>

A great periodic table challenge

<http://www.ilpi.com/genchem/periodicquiz.html>





2

# Associated Chemistry Teachers of Texas MEMBERSHIP APPLICATION

(Current members should use this form to update information)

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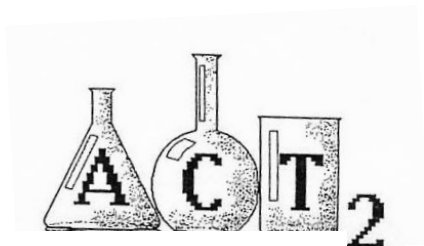
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Associated Chemistry Teachers of Texas

Meg Young, Editor

118 Monticello Dr.

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